

Abstract

5 To provide an efficient method for cleaning film-forming apparatuses in order to remove a ruthenium-type deposit residing on a constituent member of a film-forming apparatus after said apparatus has been used to form a film comprising ruthenium or solid ruthenium oxide, wherein at least the surface region of the ruthenium-type deposit comprises solid ruthenium oxide.

10 A ruthenium-type deposit, at least the surface region of which is solid ruthenium oxide, is brought into contact with reducing gas that contains a reducing species comprising hydrogen or hydrogen radical and the solid ruthenium oxide is thereby converted into ruthenium metal. This ruthenium metal is subsequently converted into volatile ruthenium oxide by bringing the ruthenium metal into contact with an oxidizing
15 gas that contains an oxidizing species comprising an oxygenated compound, and this volatile ruthenium oxide is removed from the film-forming apparatus.

Selected Drawing : 1